

# DARPA BAA PROCESS

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Michael Mutty  
DARPA Contract Management Office

NGS2 Proposers Day

March 22, 2016



- READ THE BAA
  - DRAFTING THE BAA
    - Words are Meaningful
    - Must and Shall
    - May
  - Technical vs Administrative
    - Technical Leads to “Selectable”
    - Administrative Leads to Contract Award
      - Cost Proposal
      - IP Assertions



# BAA PROCESS

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- PROPOSAL PREPARATION/SUBMISSION
  - Instructions are detailed in the BAA (**Follow closely**)
  - **ALL** questions to NGS2@darpa.mil
  - FAQ (including today's) available on the Program website (**Read Regularly**)
  - Funding instruments = procurement contracts, other transactions, and, cooperative agreements
- Assert rights to **all** technical data & computer software generated, developed, and/or delivered to which the Government will receive less than Unlimited Rights
  - Assertions that apply to Prime and Subs
  - Use defined "Basis of Assertion" and "Rights Category"
  - **Justify** "Basis of Assertion"
- If you don't justify your proposed costs, we can't justify awarding you a contract.



# BAA PROCESS

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- EVALUATION/AWARD
  - Read Evaluation Criteria Carefully
  - Government reserves the right to select for award all, some, or none of the proposals received.
  - Government anticipates making multiple awards
  - No common Statement of Work - Proposals evaluated on individual merit and relevance as it relates to the stated research goals/objectives rather than against each other
  - Only a duly authorized Contracting Officer (KO) may obligate the Government

# Defense Sciences Office

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Dr. Stefanie Tompkins

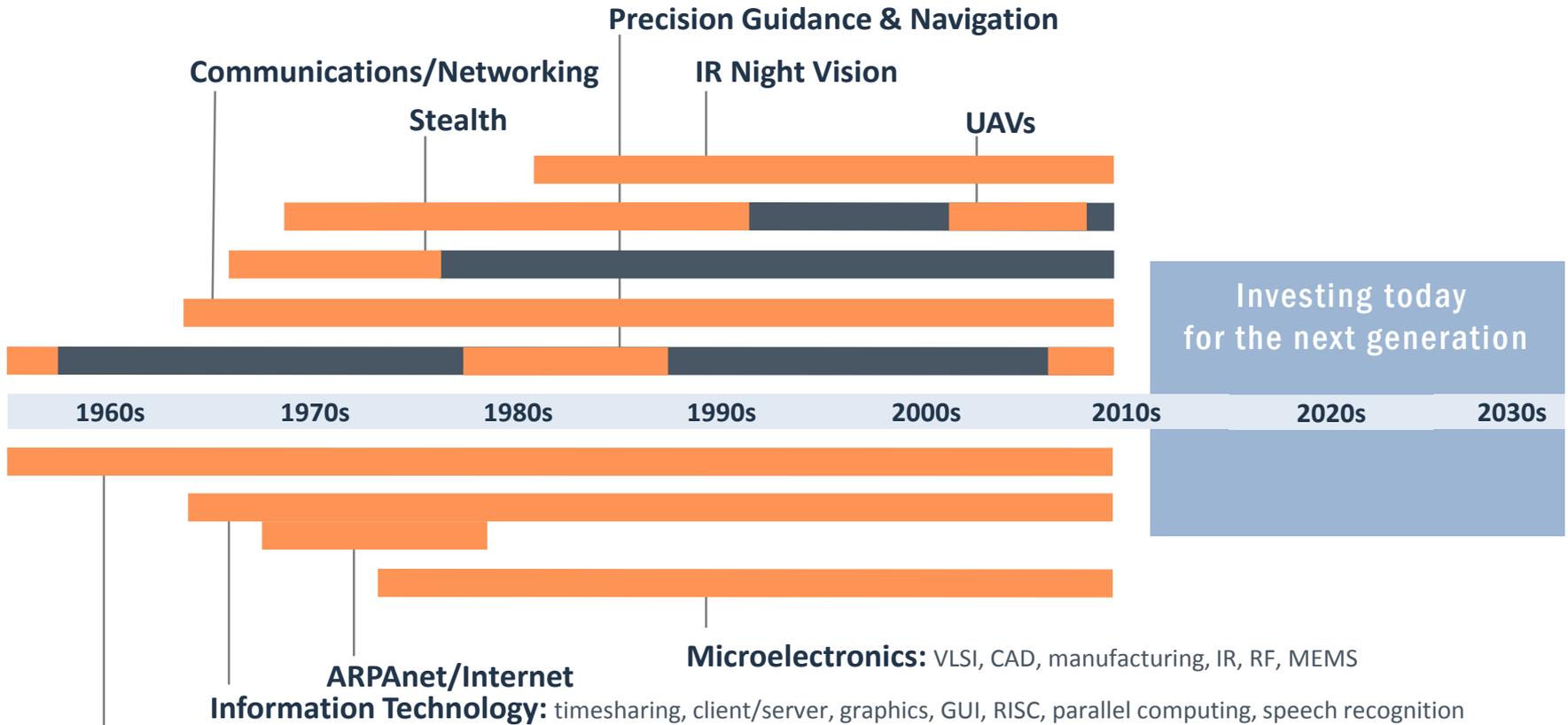
March 22, 2016





# DARPA's Mission:

## Breakthrough Technologies For National Security



Investing today for the next generation

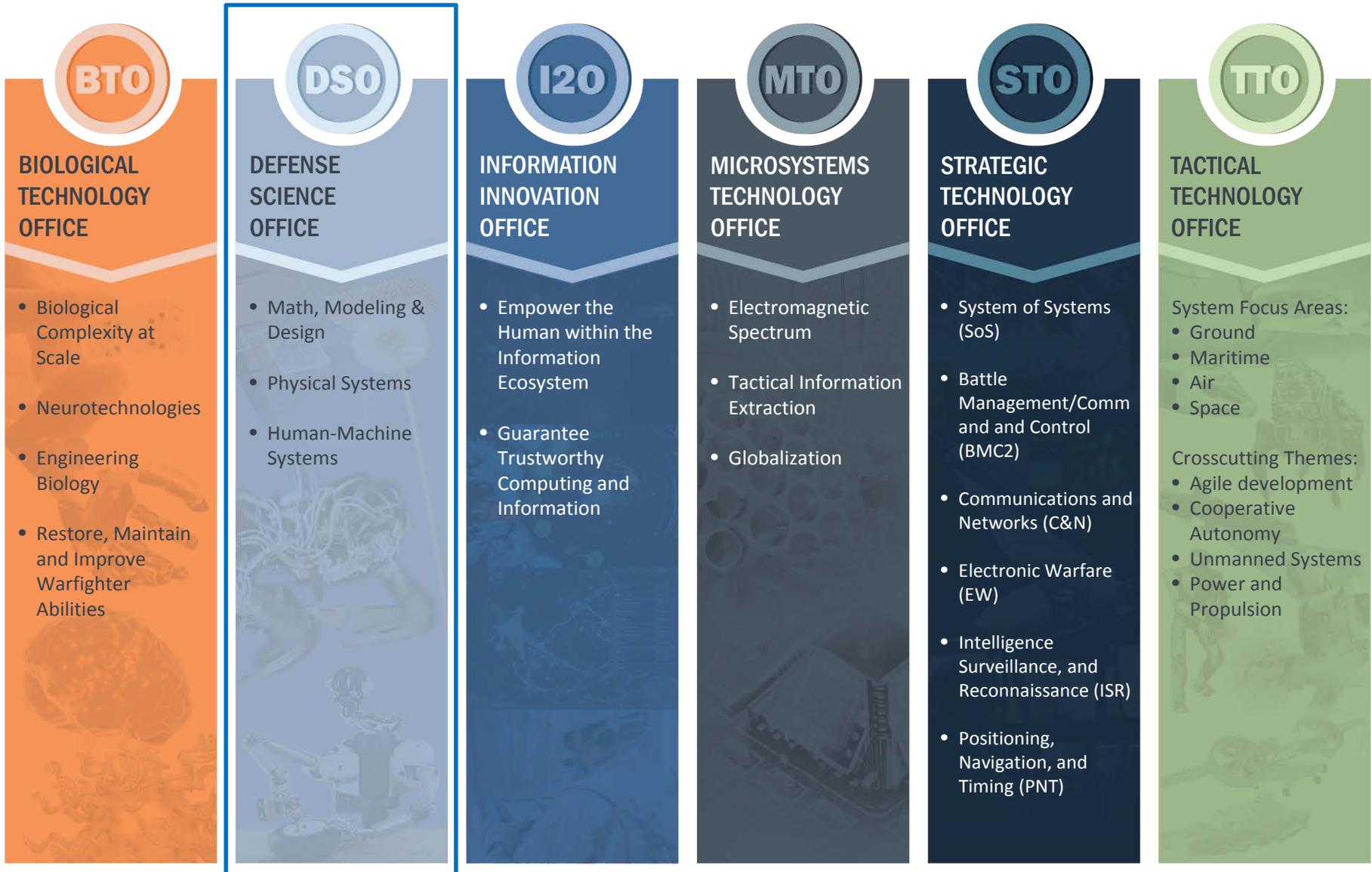
**Materials Science:** semiconductors, superalloys, carbon fibers, composites, thermoelectrics, ceramics

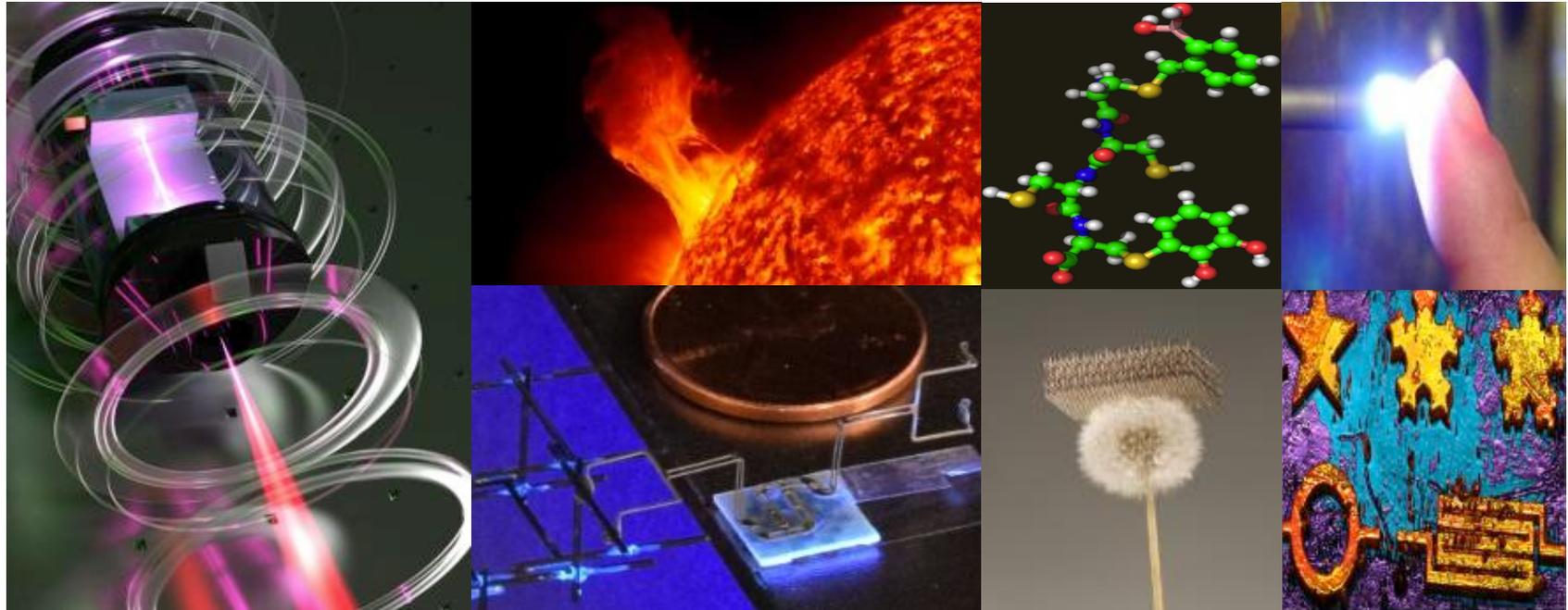
**Information Technology:** timesharing, client/server, graphics, GUI, RISC, parallel computing, speech recognition  
**Microelectronics:** VLSI, CAD, manufacturing, IR, RF, MEMS

These new capabilities require a healthy ecosystem across Service S&T, universities, and industry  
**DARPA's role: pivotal early investments that change what's possible**

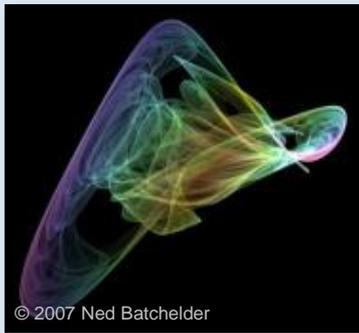


# DARPA Technical Offices





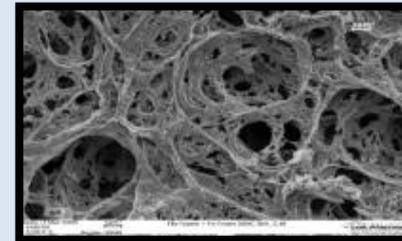
**Accelerating breakthrough discoveries to create new enabling technologies for national security**



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## Math, Modeling & Design

## Physical Systems



## Human-Machine Systems



Credit: Detroit Institute of Arts

## Social Systems



The Economist, April 2012



We look forward to your ideas

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# NEXT GENERATION SOCIAL SCIENCE

NGS2

"We are trying to prove ourselves wrong as quickly as possible, because only in that way can we find progress."

- Richard Feynman



# NGS2 Proposers Day Agenda

Agenda	
8:00 – 9:00 AM	Registration
9:00 – 9:30 AM	DSO Overview – Dr. Stefanie Tompkins, <i>DARPA DSO Director</i>
9:30 – 9:45 AM	Contract Management Office Briefing – Mr. Michael Mutty, <i>DARPA CMO</i>
9:45 – 10:30 AM	NGS2 Overview – Dr. Adam Russell, <i>DARPA DSO</i>
10:30 – 10:35 AM	Attendees may submit questions on cards for Q&A session
10:35 – 11:00 AM	Break
11:00 – 11:15 AM	Answers to submitted questions
11:15 – 12:30 PM	Participant Presentations (5 min. each)
12:30 – 1:30 PM	Lunch (provided only for participants who pre-paid on registration website)
1:30 – 3:20 PM	Participant Presentations Continued (5 min. each)
3:20 – 3:40 PM	Break
3:40 – 5:00 PM	Participant Presentations Continued (5 min. each)



# Outline

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- Goals
- Mechanics
- (some) Expectations
- Proposal Guidance

## **Important disclaimer:**

- In the event of a disagreement between the contents of the BAA and the information in this briefing, please follow the BAA. No exceptions.

# Next Generation Social Science (NGS2)

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Dr. Adam Russell  
Defense Sciences Office

Proposers Day Briefing

March 22, 2016





# NGS2 Seeks to Accelerate Discovery

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- Social science has limited ability to make strong and generalizable inferences about causation
  - NGS2 hypothesizes that recent technical advances may overcome current limitations through new ways of testing and validating causality
- Researchers often have to choose between causality or correlation
  - NGS2 hypothesizes that new tools and methods will enable combined causal and correlational approaches for deeper insights and greater inference
- Current challenges slow the rate of discovery and evaluation of “what matters most”
  - NGS2 hypothesizes that accelerating the rate of discovery will help us better know what to measure



## NGS2 Goal: What are we trying to do?

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- Goal: Build a new capability (methods, models, tools, and a community of researchers) to perform rigorous, reproducible experimental research at scales necessary to understand emergent properties of human social systems
- Exemplar challenge: Understand what matters most for explaining/predicting the emergence of "Collective Identity"
  - Collective identity is a shared sense of self among a group of individuals (i.e., when does "me" blend with "we"?)



## NGS2: Expected Outcomes

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- Expected outcomes:
  1. New research methodologies, models, and tools that augment current social science approaches and provide a deeper understanding of collective identity formation
  2. An understanding of the potential and limitations of these methodologies, models and tools for application to other hard social science questions
  3. A multidisciplinary research community made up of scientists who are tackling human social behavior



# NGS2 Mechanics

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- Technical Areas
- Teams and Teaming
- Phases and Research Cycles



# Three Technical Areas

## **TA1: Predictive Modeling and Hypothesis Generation**

- Develop multiple models and theories that predict direction and size of experimental effects
- Focus on causality and “what matters most”

## **TA2: Experimental Methods and Platforms**

- Increase Ns to test multiple hypotheses/predictions
- Increase participant diversity to assess robustness of effects
- Increase external validity and generalizability
- Increase transparency
- Increase speed

## **TA3: Interpretation and Reproducibility**

- Focus on predictive accuracy and registered reports
- Include confirmatory and exploratory analyses
- Replicate own experiments
- Confirm reproducibility of own and others’ results



# Three Categories of Research Teams

**TA1:  
Predictive  
Modeling and  
Hypothesis  
Generation**

**TA2:  
Experimental  
Methods and  
Platforms**

**TA3:  
Interpretation  
and  
Reproducibility**

## End-to-End (ETE) Teams

- Multidisciplinary teams that will enact an End-to-End research approach addressing **each of the TAs**
- Engage in cycles of modeling, hypothesis generation, prediction, experimentation, analysis, reproducibility and replication beginning in Phase 1 and continuing through Phase 2

## Enablers

- Smaller, targeted efforts to develop and test new or early stage high-risk, high-payoff "Enabling" technologies in one or more of the TAs
- Integrate successful capability into Phase 2 End-to-End teams

## Testing and Evaluation (T&E)

- Assist the Government with evaluation of the other performers' programmatic and technical progress towards NGS2 goals
- Provide consultation, infrastructure support, and collaboration enhancement



# NGS2 encourages multidisciplinary teaming!

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- DARPA highly encourages – and will facilitate – teaming. See BAA, VIII.C.
- Interested parties should submit a one-page profile including the following information:
  - Contact information
  - Proposer's technical competencies.
  - Desired expertise from other teams, if applicable.
- All profiles must be emailed to [NGS2@darpa.mil](mailto:NGS2@darpa.mil) no later than 4:00 p.m. on March 28, 2016.
- Following the deadline, the consolidated teaming profiles will be sent via email to the proposers who submitted a valid profile.



But!...

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Specific content, communications, networking, and team formation are the sole responsibility of the participants.

Neither DARPA nor the DoD endorses the information and organizations contained in the consolidated teaming profile document, nor does DARPA or the DoD exercise any responsibility for improper dissemination of the teaming profiles.



# NGS2 T&E Team: Capabilities Required

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- Looking for innovative approaches to support:
  - Facilitating registered reports
  - Registering and scoring of performers' predictions, analytic plans
  - Comparing performer accuracy to other (potentially extramural) predictions
  - Evaluating development, testing, and integration of Enablers
  - Tracking and consulting on state-of-the-science tools, methods, and best practices
  - ETE reproducibility
  - ETE and Enabler coordination as necessary



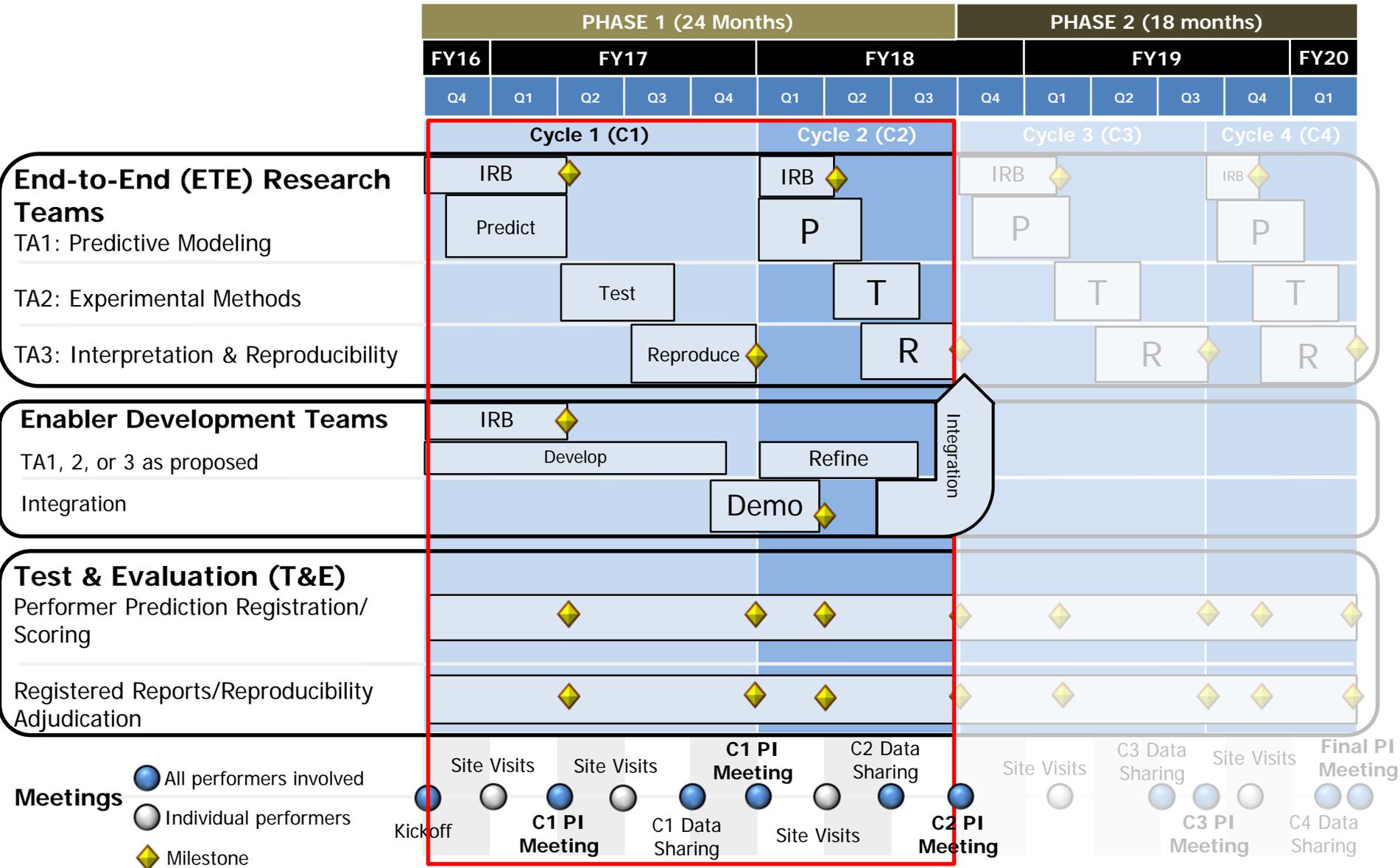
# Two Phases, Four Research Cycles

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- The NGS2 program is divided into **two phases**
  - **24-month base period (Phase 1)**
  - **18-month option period (Phase 2)**
- Each phase will consist of **two research cycles**
  - **Phase 1 – Cycle 1 and 2**
  - **Phase 2 – Cycles 3 and 4**
- Phase 1 is focused on testing feasibility
  - ETE Teams will predict outcomes for their **own experiments**
  - Promising teams/technical approaches may be encouraged to continue
- Phase 2 is focused on testing robustness
  - ETE Teams will predict outcomes for **all experiments**
  - Enablers will have been integrated



# NGS2 Timeline







# (some) NGS2 Expectations

Technical Area	NGS2 Expectations
<b>Predictive Modeling and Hypothesis Generation</b>	<ul style="list-style-type: none"><li>• Cross-disciplinary and diverse models for new insights and compensating for research biases</li><li>• Pre-registration of precise experimental predictions</li><li>• Scoring accuracy of predictions</li></ul>
<b>Experimental Methods and Platforms</b>	<ul style="list-style-type: none"><li>• Archived, transparent design process for reproducible research</li><li>• Design tools and platforms for large-scale (N &gt;1000) multi-factorial experiments</li><li>• Methods for ethical collection of data at scale (multiple locations, high frequency, etc.)</li></ul>
<b>Interpretation and Reproducibility</b>	<ul style="list-style-type: none"><li>• Analytic and visualization methods to measure/interpret emergent properties of social systems</li><li>• Tools to address missing/noisy data while increasing capability of others to work with them</li><li>• 100% reproducibility of results, 100% replication of experiments</li></ul>



# NGS2 Proposal Guidance

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- Key Dates
- Human Subjects Research
- Intellectual Property
- Collaboration
- Data Management Plan
- Proposal Tips



## NGS2 Key Dates

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BAA Published	March 18, 2016
Proposers Day	March 22, 2016
Teaming Profiles Due	March 28, 2016
Abstracts Due	March 31, 2016 – 4 PM
FAQ Submissions Due	May 11, 2016
Proposals Due	May 18, 2016 – 4 PM



# Human Subjects Research

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- **PLEASE READ THE BAA FOR DETAILS, especially Section VI.B.2**
- Research involving human subjects that is conducted or supported by the DoD must comply with 32 CFR 219, *Protection of Human Subjects*, and DoD Instruction 3216.02, *Protection of Human Subjects and Adherence to Ethical Standards in DoD-Supported Research*
- DoD/DARPA funding cannot be used towards human subjects research until ALL approvals are granted
- Any task that involves HSR must be clearly identified in the proposed Statement of Work, schedule, and cost details
- The IRB approval process can last between one and three months, followed by a DoD review that could last between three and six months
- **Proposals involving HSR that fail to supply evidence of or a plan for review by an IRB may be deemed non-conforming and, as such, not be reviewed**



# Intellectual Property

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- Data sharing and collaboration are key aspects of this program
- Therefore, intellectual property rights asserted by proposers are strongly encouraged to be aligned with open source regimes
- **See Section VI.B.1 in the BAA for further information**



## NGS2 Collaboration

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- A core goal of the program is the creation of a new research community
- You WILL have to share relevant information regarding your research and development with other performers to support the larger program goals
- Roles and relationships will vary according to Team Type:
  - ETE teams will need full access to other ETE team's experimental designs and results
  - Enabler teams will need to work with ETE teams to develop enabling tools
  - T&E team will need access to ETE and Enabler performer plans and methods
- Clearly describe plans for interfacing and, if relevant, integrating your proposed approaches with other NGS2 performers
- **Proposals that fail to discuss these plans may be deemed non-conforming and removed from consideration**



# NGS2 Data Management Plan

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- NGS2 will depend on data collection, protection, processing, curation, sharing, and preservation
- All proposals *must* include a draft Data Management Plan (DMP). Proposals submitted without a DMP may be deemed non-conforming and not be reviewed.
- As appropriate, DMP Elements might include (for example):
  - Plans for data sharing – to include extent and mechanisms
  - Description of the hosting environment(s) for sharing digital research data
  - Any data management standards, including meta-data standards, and/or community best practices that may apply
  - Plans for “data persistence” and preservation beyond the program
  - Rough estimates of data kinds and assets; formats; sizes (e.g., kB, MB, GB, TB)
  - Methods for addressing and protecting sensitive data, to include participant anonymity, privacy or data redaction
  - Anticipated current or future data quality issues
  - Anticipated costs for digital data management
  - How the DMP enhances validation and reproducibility of results
  - How the DMP may support future innovation



## NGS2 Proposal Tips

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**Read the BAA!** (If the BAA differs from this presentation, be guided by the BAA)

- If in doubt, address the Heilmeyer Catechism
- Don't overlook mandatory inclusions as highlighted by the BAA – a great idea can be sunk by ignoring the details
- Present a compelling, innovative approach that isn't addressed by current state of the art - describe how it will advance the science, provide new capabilities, and positively impact the community of scientists
- Consider carefully the category (ETE, Enabler, T&E) to which you are proposing – is this *really* the category your team should be in?
- Back up your ideas and technical approaches (e.g., theoretical arguments, models, past results, new data)
- Provide quantitative metrics and milestones to assist DARPA in evaluating feasibility and transparency of proposed work
- Where possible, go open-source. If you can't, provide strong justification.
- Don't forget to address risks! "Hope is not a management strategy."



# Proposal Abstracts

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Proposers are **highly encouraged** to submit an abstract

- Submit to <https://baa.darpa.mil/> (do not submit via email) – see BAA Section IV.E.1 for details
- DARPA will respond to abstracts with a statement as to whether DARPA is interested in the idea
  - While it is DARPA policy to attempt to reply to abstracts within thirty calendar days, proposers may anticipate a response within approximately two weeks
- Regardless of DARPA's response to an abstract, proposers may submit a full proposal
- Abstracts will be reviewed in the order they are received
- DARPA will review all full proposals submitted using the published evaluation criteria and without regard to any comments resulting from the review of an abstract



# NGS2 Evaluation Criteria

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- **Review and Selection Process:** DARPA will conduct a scientific/technical review of each conforming proposal. Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement.
  
- **NGS2 Evaluation Criteria:** Proposals will be evaluated using the following criteria, listed in descending order of importance:
  - **(a) Overall Scientific and Technical Merit;**
  - **(b) Potential Contribution and Relevance to the DARPA Mission;**
  - **(c) Cost Realism**

(See BAA Section V. A. for specific details on each criterion)



# NEXT GENERATION SOCIAL SCIENCE

NGS2

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- Richard Feynman



Thank you.

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[www.darpa.mil](http://www.darpa.mil)